Improvements in or relating to locating means for electric cables or conductors

Patent Number: GB956898
Publication date: 1964-04-29
Inventor(s): TEARSE ROBERT
Applicant(s):: VOLEX ELECTRICAL PRODUCTS LTD
Requested Patent: GB956898
Application Number: GB19620006226 19620217
Priority Number(s): GB19620006226 19620217
IPC Classification:
EC Classification: H02G3/26
Equivalents:

Abstract

956,898

PATENT SPECIFICATION

DRAWINGS ATTACHED

956,898

Inventor: ROBERT TEARSE

Date of filing Complete Specification: Feb. 18, 1963.
Application Date: Feb. 17, 1962. No. 6226/62.
Complete Specification Published: April 29, 1964.

Index at acceptance:—H2 C3A
International Classification:—H 01 b

COMPLETE SPECIFICATION

Improvements in or relating to Locating Means for Electric Cables or Conductors

We, VOLEX ELECTRICAL PRODUCTS LIMITED, a British Company, of 37 Brown Street, Manchester 2, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to locating means for electric heating or other systems in which a number of cables or conductors, or different parts of a single cable or conductor, are disposed in side-by-side relation to form a grid or mesh.

In the production of an electric heating system, it is common practice to lay an electric cable in zig-zag fashion, or in several juxtaposed lengths, upon a base of concrete, wood, sand or other material and subsequently to apply a covering of concrete, plaster, sand, or other material to form a panel which may comprise at least part of a floor, wall, ceiling, roadway or other surface requiring to be heated.

The successive loops of the zig-zag or successive bars of the grid aforesaid should be arranged at a uniform distance apart, depending upon the length and rating of the cable in use, to avoid physical contact or hot spots in the panel. and it is important that the predetermined spacing shall not be disturbed during the covering of the cable or cables.

A popular method of ensuring this is to locate the zig-zag loops or separate cable lengths, adjacent their ends (and if necessary at intermediate positions) in notches formed at regular intervals in transversely disposed spacer bars previously affixed to the panel base.

Whilst other materials are sometimes employed, these spacer bars are most usually produced from metal or plastic in a "T", angle, or other section such that the required notches can be formed in an upstanding part thereof.

When the cable used is covered with rubber, plastic or other flexible, insulant, considerable tension is required to hold its juxtaposed loops or lengths at a uniform distance apart, which necessitates such cable being forced tightly into the spacer-bar notches or, in the case of a zig-zag layout, the acute bending of the cable at the ends of the loops.

Under such circumstances the cable insulation is liable to be abraded or even cut through by contact with the sharp edges of the spacer-bar notches, which have hitherto commonly been produced by punching open keyhole-shaped slots at regular intervals in the upstanding parts of such bars.

According to the present invention, which has for its object to avoid the above-mentioned damage to cables, each locating notch is produced by severing or rupturing an upstanding part of the bar along lines which form an inverted letter "T", the shank of such "T" extending from the free edge of said bar substantially at right angles thereto and the bar material at both sides of said shank being bent in the same direction with respect to said upstanding part along mutually-divergent lines which lead to opposite extremities of the "T" head.

In the accompanying drawings:

Fig. 1 is a fragmentary side elevation of a spacer bar slit as aforesaid prior to the formation therein of a notch according to the present invention;

Fig. 2 is a fragmentary plan view of the bar showing the finished notch;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary side elevation of the bar showing a cable located in the notch; and

Figs. 5 and 6 are end elevations showing alternative forms of spacer bar notched in accordance with the invention.

In the example illustrated in Figs. 1 to 4,

the spacer bar A is formed as an extruded length of polyvinyl-chloride or other plastic angle, the upstanding flange of which is initially formed with an inverted "T" shaped slit B extending from its free edge (Fig. 1).

The parts of the flange bounding the vertical shank of the "T" are bent, along downwardly-divergent lines C which lead to opposite extremities of its head portion, to produce lugs D overhanging the horizontal flange of the angle A and radiused at E to facilitate entry of a cable (indicated at F) into the resultant truncated triangular notch G (Fig. 4).

It should be noted that the direction of cable entry is from left to right and somewhat downwards when the bar is viewed as in Fig. 3, the two lugs D being mutually convergent in this direction, so that their edges effect secure frictional engagement of a close-fitting cable without abrading the latter.

The upstanding flange of the bar A is formed with a series of such notches each separated from the next by a distance which should be as small as possible (say, 1 inch) so that the spacing of juxtaposed limbs of a cable laid zig-zag across two such bars can be varied to suit its rating and stiffness.

It should be understood that, although a plastic angle has been shown by way of example, the spacer bar may be formed of metal or any other ductile material and its section may equally well be "T", channel or flat. With sections other than flat, the notched part of the bar may be perpendicular as in Figs. 1 and 4, or at an obtuse angle as in Fig. 5, to the horizontal part in which holes H are formed to allow of the bar A being fixed by screws or other means to the base on which the cable is to be laid. Fig. 6 illustrates a channel-section bar I with opposed notches in the side walls thereof.

The operation of severing and bending the bar may be carried out separately, or alternatively the severing and bending tools may be combined so that one or more notches such as G can be completely formed by a single punching operation.

It will be appreciated that the use of spacer bars notched as above described enables a cable F with a resilient flexible sheath to be drawn through the notches G without abrasion and, if a sufficiently close fit within the lugs D, securely located by the latter in such manner that the tension initially imparted thereto is maintained without any needs for sharply bending the cable at the ends of the loops in a zig-zag layout. When the notched part of the bar A is inclined to the attachment part as shown in Fig. 5, a self-locking effect is obtained, inasmuch as the act of drawing the cable F horizontally through the notches G causes it to bed down against the inner ends of the latter.

Furthermore, the total cost of severing and bending to form the notches need be no greater than that involved in stamping out keyhole-shaped slots in the known manner.

WHAT WE CLAIM IS:—

1. A bar having a series of spacer notches for locating electric cables or conductors engaged therein, characterised in that each such notch is produced by severing or rupturing an upstanding part of the bar along lines which form an inverted letter "T", the shank of such "T" extending from the free edge of said bar substantially at right angles thereto and the bar material at both sides of said shank being bent in the same direction with respect to said upstanding part along mutually-divergent lines which lead to opposite extremities of the "T" head.

2. A spacer bar according to Claim 1, further characterised in that the bent portions of the bar are mutually convergent in a direction away from its upstanding part and radiused at their junctions with the latter, so that a close-fitting cable can readily be drawn through the notch in the direction aforesaid and will thereafter be frictionally located endwise by the edges of said convergent parts.

3. A spacer bar according to Claim 2, and having an attachment part inclined to the upstanding part in which the notches are formed, the angle of inclination being such that the act of drawing the cable through the notches in a direction substantially parallel to said attachment part causes it automatically to bed down against the inner ends of said notches.

4. A spacer bar for electric cables or conductors, substantially as described with reference to and as shown in, Figs. 2 to 4 or Fig. 5 or Fig. 6 of the accompanying drawings.

For the Applicants,
WILSON, GUNN & ELLIS,
Chartered Patent Agents,
57, Market Street, Manchester 1.

Leamington Spa: Printed for Her Majesty's Stationery Office, by the Courier Press (Leamington) Ltd.—1964. Published by The Patent Office, 25 Southampton Buildings, London, W.C.2, from which copies may be obtained.

956898 COMPLETE SPECIFICATION

1 SHEET *This drawing is a reproduction of the Original on a reduced scale*

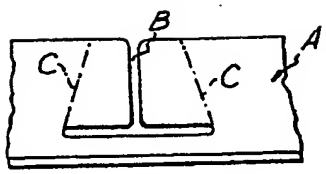

Fig. 1.

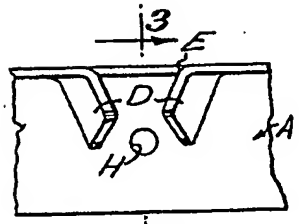

Fig. 2.

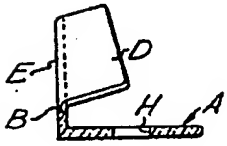

Fig. 3.

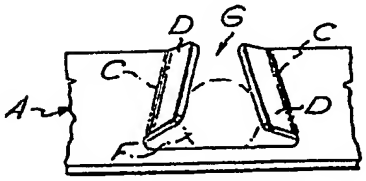

Fig. 4.

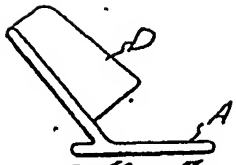

Fig. 5.

Fig. 6